## REMARKS

In view of the following remarks responsive to the Office Action dated March 29, 2005, Applicant respectfully requests favorable reconsideration of this application.

Claims 1, 3-15, and 17-36 are pending in this application. Independent claims 6 and 17 are allowed. Claims 1, 3-5, 7, 8, 14, 15, 18, and 23-36 stand rejected under 35 U.S.C. §103(a) as obvious over Openlander in view of Murphy. Claims 9-13 and 19-22 stand rejected under 35 U.S.C. §103(a) as obvious over Openlander in view of Murphy as applied to the aforementioned claims and further in view of Nichols.

These are essentially the same rejections asserted in the previous Office Action. Previously, Applicant had argued that the proposed combination of Openlander and Murphy was improper for at least two reasons, namely, (1) incorporating the teachings of Murphy into Openlander would destroy the purpose of Openlander, whereby the references actually teach away from the proposed combination; and (2) a person of ordinary skill in the art would not have a reasonable expectation of success with the proposed combination because there is no way to know what the results of the combination would be.

As set forth in MPEP §2143, a prima facie obviousness rejection must establish three things, as set forth below.

> First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine the reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2143

As set forth in MPEP §2143.02 (MPEP, page 2100-99):

> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In Re Ratti*, 278 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959).

The proposed combination violates this tenet. Particularly, the concept behind the present invention is to improve low angle gain of a microstrip antenna while not diminishing performance near zenith. More particularly, the present invention improves low angle gain of a microstrip antenna primarily by two features of the design, namely, (1) use of a dielectric lens that encapsulates the patch and refracts electromagnetic waves so as to increase the gain at low angles while not substantially affecting gain at higher angles; and (2) placing the patch on a first ground plane raised above a second ground plane to further enhance the refraction effect, thereby increasing radiation at low angles without diminishing gain at the zenith.

The Office relies on Openlander as teaching use of a lens to increase low angle gain and relies on Murphy as teaching placing the first ground plane above and spaced apart from a second ground plane. However, as previously argued, adding the teachings of Murphy into Openlander changes the principal of operation of Openlander. Particularly, the key goal of Openlander is to increase low angle gain without increasing the height (profile) of the antenna. This is repeatedly emphasized in Openlander, for example, at (1) the first sentence of the abstract, (2) the first sentence of the application ("This invention relates to antennae for wireless signal transmission, and more particularly to a low profile cellular antenna design meant for facilitating cellular telephone communications in an inconspicuous manner"), (3) column 2, lines 45-49, (4) the first line of the summary of the invention, (5) column 4, line 66, et seq., and (6) the preambles of all of the claims.

Murphy teaches a microstrip antenna having a first ground plane disposed above and apart from a second ground plane. However, while Murphy does teach disposing the first ground plane above and apart from a second ground plane in connection with lowering the radiation angle, Murphy discloses that the required spacing between the two ground planes is on the order of a quarter wavelength and a half wavelength. These are huge distances compared to the distances in the present invention and would utterly defeat the primary objective of Openlander of having a low profile, inconspicuous antenna for a cellular telephone. Accordingly, the proposed substitution would change the principle of operation of Openlander, contrary to the above-quoted requirement of MPEP §2143.02.

More particularly, in the present invention, the purpose of raising the first ground plane above a second ground plane is to permit the lens to be more easily fabricated for its intended purpose of increasing gain at low angles without affecting gain at the zenith. It has noting to do with altering the actual radiation pattern out of the patch. In Murphy, on the other hand, the purpose is entirely different. In Murphy, the first ground plane is raised above the second ground plane a specific distance so as to actually change the radiation pattern directly out of the patch. In the present invention, the spacing of the two ground planes has nothing to do with changing the radiation pattern out of the patch. It is only the lens that changes the pattern after the radiation is emitted.

When formulating an obviousness rejection, consideration of the present invention is improper as that would constitute hindsight reconstruction. Thus, the above explanation is merely for editorial purposes to assist in understanding the present invention in relation to the prior art. The bottom line is that placing two ground planes apart from each other by a quarter wavelength to half a wavelength

would alter the principle of operation of Openlander and thus is an improper combination in accordance with MPEP §2143.02.

The combination is even further improper because it does not meet the second prong of the obviousness test set forth in MPEP §2143. Particularly, the ordinarily skilled artisan would not have an expectation of success in connection with the proposed combination. In the present invention, the concept is to take the radiation pattern out of a standard patch antenna and focus it at low angles using a lens. On the other hand, the proposed combination of Openlander and Murphy results in an antenna that has a low radiation pattern directly out of the patch (as taught by Murphy) which would then impinge on the lens of Openlander. However, if the radiation emitted out of the patch is already focused at a low angle, it is not possible to determine what would happen when that radiation hits Openlander's lens given the limited information available from the references. Quite possibly, it will make the radiation too narrow or even reverse the low angle pattern to increase radiation at the zenith and decrease it at low angles.

The present invention combines two features, i.e., a lens and a raised ground plane, that work together to achieve the desired low angle radiation pattern. Specifically, the effectiveness of the lens and the ease of manufacture of the lens is improved by raising the ground plane. Openlander and Murphy, on the other hand, simply disclose two different ways to increase low angle radiation that are quite likely incompatible with each other as noted above. Note, however, that, under the law, we do not even need to determine whether or not they are compatible because that is not the issue. The issue is whether there is a suggestion to combine the references. The two references simply teach two different ways of achieving a similar result and there is no basis to conclude that a

combination of the two leads to a desirable result. Thus, there is no teaching leading the skilled artisan to such a combination

The Openlander and Murphy references are analogous to a first reference that teaches writing with a pencil and a second reference that teaches writing with a pen. Both references teach different ways to accomplish the same result, which is very different than suggesting any reasonable combination of a pen and pencil.

Applicant had made similar arguments in response to the previous Office Action. The Office addressed those arguments in the latest Office Action. Particularly, the Office found Applicant's arguments unpersuasive, asserting:

> Specifically, as now set forth above in the primary reference rejection, it can be seen that lowering the distance between ground planes (as taught by Murphy, et al.) can increase gain at zenith, while the lens structure in Openlander increases gain near the horizon (below 45 degrees). A skilled artisan recognizes as obvious that these techniques may be employed in conjunction in order to establish the type of radiation pattern desired.

In the primary rejection, the Office asserted:

> Murphy, et al are cited as teaching that it is known to decrease the radiation angle of a microstrip antenna by raising it above a second ground plane (see Figures 5-7 of Murphy, et al). The lens 60 in Openlander lowers the radiation beam below 45 degrees as claimed. It would have been obvious to employ the techniques of Murphy, et al in the Openlander et al. antenna, particularly since there are two ground planes employed therein.
>
> A skilled artisan would have found it obvious that there is no decrease in gain at zenith when the lens is employed in Openlander because Murphy shows at least three distances in Fig. 5 in which the patch may be disposed above the ground plane (30) in Fig. 6. When the distance "b" is chosen, for example, there is no decrease in gain at the zenith unless the distance "c" is employed since Openlander uses the lens to provide improved gain below 45 degrees. However, a skilled artisan would lower the distance between ground planes, say for example from "c" to "b" as taught by Murphy in order to maintain a usable gain at the zenith. The same could be said by lower the distance from "b" to "a".

Applicant respectfully traverses as the Office is using impermissible hindsight reconstruction. Figure 5 and the related text of Murphy (column 3, line 65 through

column 4, line 31) clearly discloses that, as the radiator 16 increases in height above the primary ground plane up to one-half of a wave length, the gain at zenith decreases as the low angle gain increases. However, that is not the teaching necessary for a proper obviousness rejection in this case. The teaching that is necessary is a suggestion to combine the raised ground plane of Murphy with the lens of Openlander. Murphy teaches nothing more than increasing the spacing between the two ground planes decreases radiation at zenith (while radiation at low angles decreases) and vice versa.

In essence, the Office has cited Murphy for teaching increasing gain at low angles by increasing the distance between the radiator ground plane and the primary ground plane. However, in the quote above, the Office asserts that it would be obvious to decrease the distance between the two ground planes in order to increase radiation at zenith (at the expense of radiation at low angles). Thus, the Office is using two opposite teachings of Murphy and saying that Murphy suggests both. This, of course, is not possible.

The fact of the matter is that the prior art of record really does not suggest either because, as noted above, the two references do not adequately suggest any combination thereof. They just teach two different ways of achieving a similar result with no suggestion that a combination thereof would provide any synergistic result toward achieving that goal. In fact, as noted above, it is quite likely that combining the two techniques would lead to a very undesirable result, such as a radiation pattern that is too narrow or a radiation pattern that restores gain at the zenith and decreases it at low angles.

Accordingly, the proposed combination is not fairly suggested in the prior art of record for the reasons discussed above.

In view of the foregoing amendments and remarks, this application is now in condition for allowance. Applicant respectfully requests the Examiner to issue a Notice of Allowance at the earliest possible date. The Examiner is invited to contact Applicant's undersigned counsel by telephone call in order to further the prosecution of this case in any way.

Respectfully submitted,

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